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rudis Lec.,* New Species, 1863, p. 15.
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obscurus Lec.,* loc. cit., p. 286.

A. amaroides Lec.,* Ann. Lyc., v, p. 184.

A. sericeus Harr.,* N. E. Farmer, 1828, p. 177.
femoratus Dej., Species, iv, p. 224.

A. (*Dichirus*) **pallidus** Mots., Bull. Mosc., 1859, iii, p. 137. Unknown to me.

Species marked * are those of which I have studied the type or a specimen carefully compared therewith.

Critical notes on the Species of SELENOPHORUS *of the United States. By George H. Horn, M. D.*

(*Read before the American Philosophical Society, Nov. 5th,* 1880.)

Without wishing at the present time to discuss the question of the validity of Selenophorus as a genus distinct from Harpalus, I will only state that no characters have yet been given which are permanent in all the species. Nevertheless it seems to be at least a well defined group in which there are three series of punctures or foveolæ situated on the second, fifth and seventh elytral striæ, a character which suggests a similar division of species in Pterostichus.

The only work in which the species of this genus has been treated as a whole is by M. Putzeys (Stettin Zeitschrift, 1878, pp. 1—73), whose arrangement, even with our small number of species, I have been unable to follow, the primary division being rather inexact and the secondary characters not easy to be perceived. There seems also to have been a tendency to exaggerate the importance of differences which are either individual or local and the number of species unnecessarily increased.

Since the reception of the above mentioned paper, material has gradually been accumulated in our cabinets from all parts of the country, which shows clearly that the species have a very wide range of distribution, and the variations between widely separated localities are well marked, while the differences become evanescent in intermediate localities.

All the species belong to the Atlantic fauna, several however extend through Arizona to the Peninsula of California, but none occur in the true Pacific fauna, that is from San Diego northward.

The following table gives in brief the characters separating the species recognized in the subsequent pages :

Prosternum obtuse at tip, not margined.
  Species with bronzed surface lustre.
    Intervals of elytra smooth, not pubescent, eighth stria not distant from margin.
      Elytra at tip feebly sinuate, the outer interval punctulate.
        Elytral punctures large, almost foveolate.....**palliatus** Fab.
        Elytral punctures very small.....**pedicularius** Dej.
      Elytra at tip strongly sinuate, the outer angle subdentate.
        Outer interval not punctulate.....**fatuus** Lec.
    Intervals punctulate and pubescent, eighth stria more distant from the margin than from the seventh.....**breviusculus**, n. sp.
  Species black above, more or less iridescent.
    Thorax as wide or wider at base than apex.
      Outer interval punctulate.....**opalinus** Lec.
      Outer interval not punctulate.....**gagatinus** Dej.
    Thorax distinctly narrowed at base.
      Hind angles obtuse.
        Marginal interval punctulate.....**iripennis** Say.
      Hind angles rectangular and prominent..... **subtinctus** Lec.
Prosternum horizontal, tip slightly prolonged and margined.
  Thorax not broader at base than apex.
    Form rather narrow, elytral punctures foveolate.....**fossulatus** Dej.
    Form broader, elytral punctures small..... ..... **ovalis** Dej.
  Thorax broader at base than apex, sides nearly regularly arcuate from base to apex..... .....**ellipticus** Dej.

The characters above given seem sufficiently plain to need no comment. There have been no differences observed in the clypeal setigerous punctures, all the species having but one puncture on each side. The males have the anterior and middle tarsi moderately dilated, with two series of squamiform papillæ on the first four joints.

S. palliatus Fabr. Piceous, legs pale, upper surface shining, bronzed. Thorax equally wide at base and apex, sides feebly arcuate in front, hind angles distinct, nearly rectangular but not prominent, basal impressions moderate and with very few punctures. Elytra a little wider than the thorax, oblong oval, very feebly sinuate at tip, finely striate, striæ 2—5—7 each, with rather large punctures, the marginal interval finely punctulate and pubescent. Length .28—.32 inch ; 7—8 mm.

With this species I unite *laesus* Lec., which differs only in having the dorsal punctures a little smaller. It is the largest species of the bronzed series in our fauna.

Occurs from Florida to the Peninsula of California.

S. pedicularius Dej. Oblong oval, piceous, shining, surface bronzed, legs pale. Thorax a little broader at base than apex, sides arcuate, hind angles obtuse, disc moderately convex, basal impressions almost entirely obliterated. Elytra scarcely wider than the thorax, finely striate, intervals flat, smooth, the marginal finely punctulate, striæ 2—5—7 with fine punctures, apex feebly sinuate. Length .20—.26 inch ; 5—6.5 mm.

With this species I unite *troglodytes*, *aereus* and *puellus*. It is possible in a large series, such as I have now before me, to select forms which will agree in every particular with the descriptions of Dejean and Putzeys, but they are not species and do not deserve the name of varieties. *S. troglodytes* is more convex and the sides of the thorax a little more arcuate, the vast majority of these are females. The marginal punctation is said by Putzeys to be without pubescence ; this is not true in any well preserved specimen. The description of *puellus* shows no character whatever of a specific nature. The *aereus* Lec. is placed by Putzeys in another series in which the tarsi are said to be long, but after a careful study of this character, I find it entirely deceptive and not of the value already observed in Anisodactylus. The posterior tarsi in all the bronzed species are somewhat broader than in the iridescent species, but their length as compared with the tibiæ is the same.

I cannot understand why Putzeys, after placing *puellus* next after *pedicularius* (12) and *troglodytes* (13) in the table, should place it as 55 near *aereus* (56) in the text.

Occurs from the Middle States to Kansas, Florida and Arizona.

S. fatuus Lec. Closely resembles the preceding but more slender in form. The thorax is less transverse, somewhat narrowed behind, the hind angles distinct. The elytra are similarly sculptured but the marginal interval is entirely impunctulate and consequently not pubescent, the apex is strongly sinuate, the outer angle of the sinuation quite prominent. Length .20—.24 inch ; 5—6 mm.

This species is usually darker in color than *pedicularius* and more shining.

In this species Zimmerman (Trans. Am. Ent. Soc., 1869, p, 247,) recognized *parumpunctatus* Dej., and from the comparisons made by Putzeys, I am inclined to think that view correct, but not having types of Dejean's species, cannot say so definitely.

Occurs in the Gulf States.

S. breviusculus, n. sp. Oval, slightly oblong, facies robust, piceous, legs pale, surface feebly shining with distinct bronze lustre. Head punctulate, rugulose at the sides above the eyes. Thorax broad, apex and base equal, sides rather strongly arcuate, basal angles broadly rounded, base feebly emarginate at middle, disc convex, sides slightly depressed posteriorly, at middle more shining, finely transversely wrinkled, in front finely punctulate, at base and sides densely punctate and opaque. Elytra not wider than the thorax, scarcely one-third longer than wide, sides moderately arcuate, apex scarcely at all sinuate, moderately deeply but finely striate, intervals flat and irregularly but finely biseriately punctulate and pubescent, serial punctures very fine and indistinct, eighth stria distant from the margin. Body beneath feebly shining, abdomen sparsely punctate and with short pubescence. Legs testaceous, middle and posterior tibiæ slightly arcuate. Length .26 inch ; 6.5 mm.

This species is evidently allied to *crassiusculus, curvipes* and *arcuatus*, which Putzeys unfortunately omits from his synoptic table. It is very distinct from any other in our fauna in its general aspect as well as by the characters above given.

One specimen in my cabinet from Fort Cobb, Indian Territory, collected by Dr. Edw. Palmer, another in Mr. Ulke's cabinet.

S. opalinus Lec. Oblong, black, surface rather brilliantly iridescent. Head smooth, a foveate puncture more or less distinct on each side of the vertex. Thorax broader than long, base as wide as apex or a little wider, sides feebly arcuate, margin narrowly depressed and translucent, disc feebly convex, surface sparsely indistinctly punctulate along the base, hind angles distinct but obtuse. Elytra a little wider than the thorax, sides parallel ♂ or slightly arcuate ♀, apex feebly sinuate, surface rather deeply striate, intervals slightly convex, more so at apex and sparsely indistinctly punctulate, serial punctures distinct but not large, outer interval very distinctly punctate but not pubescent. Body beneath shining, abdomen sparsely indistinctly punctulate. Legs rufo-testaceous. Length .36—.40 inch ; 9—10 mm.

This is our largest species of the iridescent series.

Occurs from Wisconsin and Michigan to Florida and thence westward to the Peninsula of California.

S. gagatinus Dej. More slender and parallel than *opalinus* as well as more convex. The surface is also less iridescent, the thoracic margin extremely narrow and not translucent. The punctures of the elytral intervals are scarcely visible, while the marginal interval is absolutely smooth. Femora piceous, tibiæ and tarsi paler. Length .30 inch ; 7.5 mm.

To this species I refer some specimens collected by me in early Spring in Arizona which are probably immature. The head and thorax are rufo-piceous and the elytra more finely striate than in the normal form. I am unwilling to separate them until more mature specimens are seen.

Putzeys states in error that the prosternum is margined in this species.

Occurs from Massachusetts to Texas.

S. iripennis Say. Thorax broader than long, very distinctly narrowed posteriorly, hind angles distinct but obtuse, margin narrow and slightly translucent, disc smooth with few fine punctures in the vague basal impressions. Elytra broader than the thorax, sides feebly arcuate, apex scarcely sinuate, surface striate, striæ obsoletely finely punctulate, intervals flat, very obsoletely finely punctulate, the marginal usually distinctly punctulate. Legs testaceous. Length .26 inch ; 6.5 mm.

The narrowing of the thorax behind in this species is quite well marked, so that it resembles in form certain Bradycellus.

Occurs from Illinois to Georgia and Texas.

In the synoptic table given by Putzeys, *opalinus* and *gagtinus* are placed in a series in which the thorax is said to be "narrowed behind without prominent angles," while in the description the former is said to have a square thorax equally narrowed at apex and base, while the latter is said to be narrowed in front. They are also widely separated in the body of his paper with thirty-one species between.

S. subtinctus Lec. Closely resembles *iripennis*, but the thorax is more narrowed posteriorly and the hind angles sharply rectangular and slightly prominent. The outer elytral interval is very narrow and smooth. Legs pale rufo-testaceous. Length .24 inch ; 6 mm.

One specimen ; Louisiana.

S. fossulatus Dej. Oblong, depressed, black, surface with silken lustre. Thorax broader than long, base and apex equal, or the former slightly narrower, sides regularly arcuate, hind angles rectangular, not prominent. Elytra very little wider than the thorax, sides feebly arcuate, striæ very fine, serial punctures large and foveolate, apex feebly sinuate. Body beneath and legs piceous, shining, tibiæ and tarsi usually paler. Length .24 inch ; 6 mm.

This species is the least oval of this group and is easily known by the thorax, elytral punctures and lustre.

Occurs in Georgia and Florida.

S. ovalis Dej. Oblong oval, depressed, black, subopaque. Thorax with the base and apex nearly equal or very little broader at base, sides regularly arcuate, hind angles rectangular, not prominent. Elytra a little broader at base than the base of the thorax, sides moderately arcuate, apex very feebly sinuate, surface finely striate, intervals flat, serial punctures moderate in size. Body beneath and legs piceous, surface slightly iridescent. Length .28 inch ; 7 mm.

Occurs in Georgia and Florida.

S. ellipticus Dej. Oblong oval or elliptical, black, subopaque. Thorax wider at base than apex, sides regularly arcuate, hind angles rectangular. Elytra not wider than base of thorax, the margins of each nearly continuous, surface finely striate, intervals flat or very slightly convex, serial punctures very small, apex scarcely at all sinuate. Body beneath black, shining. Legs rufo-testaceous. Length .20—.24 inch ; 5—6 mm.

The males are a little more shining than the females. With this species I unite *granarius* Dej. The larger number of the species have the thorax regularly narrowing from base to apex, some few however have the base a little narrower than the disc, a little in front of the base, but the transition from one form to the other is very gradual.

Occurs from the Middle States to Georgia and Texas.

The three preceding species have the prosternum horizontal at tip, slightly prolonged and distinctly margined at the sides and apex. They form a very natural group.

Synonymy and Bibliography.

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stigmosus Germ., Ins. Spec. nov., p. 25 ; Putz. Stett. Zeits., 1878, p. 12.
impressus Dej., Spec., iv, p. 82 ; Ic., pl. 175, fig. 5.
laesus Lec., Proc. Acad., 1858, p. 59.

S. pedicularius Dej., Spec., iv, p. 100 ; Putz., loc. cit., p. 18.
troglodytes Dej., ibid., p. 101 ; Putz., p. 18.
aereus Lec., Ann. Lyc., iv, p. 293.
planipennis Lec., ibid., p. 294.

S. fatuus Lec., New Species, 1863, p. 17.
excisus ‖ Lec., Proc. Am. Philos. Soc., 1878, p. 377.

S. breviusculus Horn, n. sp.

S. subtinctus Lec., Proc. Acad., 1866, p. 365.

S. iripennis Say, Trans. Am. Philos. Soc., ii, p. 30.
varicolor Lec., Ann. Lyc., iv, p. 292.

S. gagatinus Dej., Spec., iv, p. 112; Putz., loc. cit., p. 43.
maurus Hald., Proc. Acad., i, p. 306.
viridescens Lec., Ann. Lyc., iv, p. 292.

S. opalinus Lec., List. Col., N. A., p. 13 ; Putz., loc. cit., p. 52.
iripennis ‡ Lec., Ann. Lyc., iv, p. 289.

S. fossulatus Dej., ibid., p. 88; Putz., loc. cit., p. 15.

S. ovalis Dej., Spec., iv, p. 106 ; Putz., loc. cit., p. 20.

S. ellipticus Dej., ibid., p. 108 ; Putz., loc. cit., p. 20.
granarius Dej., ibid., p. 109 ; ibid., p. 21.
pulicarius Dej., ibid., p. 108.